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cc:

Subject: Path Forward for RI Analytical

First, Level D for soil sampling & any interior dust sampling. I spoke with Duc and he completely agrees. Level C only for attic inspection/sampling. Any discussion there, let me know.

Second, without going into significant detail, the results of the ISTM tests with EMSL & others have tentatively led me to the decision to move forward with soil analysis by "EMSL" IR and SEM as contemplated in the CSS SAP, with IR the primary method. I would like Volpe & CDM to move forward with Task Order budgeting and then procurement as quickly as possible. SRC is preparing a memo documenting results and some conclusioins. We will continue to evaluate the method and others through ongoing "PE" samples and QC within the SAP, but I see no reason to delay moving forward with analysis of Libby CSS samples. In this email, I wanted to address two basic questions which may help with your discussions with EMSL and understand our needs:

1. Why have I elected to stick with IR, at least for now? I weighed the apparent benefits of IR against the apparent limitations, as well against the benefits/limitations of other methods, and concluded that IR is the available method most likely to provide what I need to fulfill decision making requirements in the SAP:

Benefits of IR

- The ability to *detect* "course" Libby asbestos materials (e.g. potential source materials) in soil at concentrations as low as .1%. I am not confident that PLM can detect concentrations at this level. At this *screening* stage, I would rather have a false positive than a false negative - at this stage the only decision for results in the .1-1% range is to not throw it out, so a false positive doesn't lead to any bad consequences (also the reason I don't need SEM confirmation as part of the method as we've discussed). I am much more confident that an "ND" by IR is more truly a "ND" than by PLM. Thus, IR is a better *screening* tool in this regard, as it will avoid more false negatives - the most important thing I want to avoid avoid at this stage. QC measures in the SAP will provide addtional information.
- The ability to fairly accurately *quantify* concentrations of "course" Libby asbestos material in soil at concentrations $\geq$ 1%, for which we will make actual cleanup decisions now. Here a false negative (e.g. IR says .8% when it really is 1.2%) will not lead to bad decision that is "final", because we will relook the .8% anyway. Additionally, we have enough cleanups in the hopper already where we couldn't get to these right away. A false positive (e.g. IR says 1.2% when it is really .8%) is also not too bad, because: (1) to date we have used "trace" by PLM as enough to justifiy action, and trace is less than 1%. See SAP Page 3-4 for more discussion on this logic. (2) most ISTM results in Libby soil were low-biased anyway, meaning actual concentrations could be higher, making the likelihood of false positives lower. I never held the illusion the method would be a great quantifier and built my decision steps considering that.
- Cost. SEM proved similarly capable of doing the above 2, but the cost is higher (x2).
- Multiple methods. EMSL's IR protocol also involves a limited PLM confirmation step, increasing confidence in results, with no added cost.

Limitations of IR

- An apparent inability to detect fine, fiber size asbestos at lower concentrations (e.g. <1%). My working hypothesis at this point is that if some course, "source type" material isn't there, then it is unlikely that fibers alone will be there. Most of this material will come from source material local to a specific spot (e.g vermiculite placed in a garden), rather than fibers drifting in

or something of that nature. So, if we are seeing at least the course material , then we: (1) won't miss many places where there are only fibers (and it takes lots of fibers to add up to .1%), and (2) might tend to underestimate the mass percentage, which aids in the false positive issue above. The SEM splits in our QC will help test this hypothesis - if the majority of our IR NDs are also ND by SEM (which can see fine material better) then we likely don't have a problem. USGS is also looking into ways to minimize/correct this, as I'm sure EMSL will.

- An inability to accurately quantify at lower concentrations (e.g. <1%) and an apparent low bias (SEM was similar). While EMSL has said they could quantify these values, the data do not reflect this. **In this regard, in may make sense for EMSL to revisit their method - quantification is not that important to me at this point (e.g. I make the same decision for .8% as I do for .1%), so I do not want to pay for steps (and results) that are not reliable and not critical at this stage. There may be an ability for us to save per sample costs here because we aren't getting the quantification promised.**

2. So, what do I need?

- I need an IR protocol from EMSL that: (1) Continues to provide results (data packages) similar to what we've received. Even though their quantification below 1% doesn't seem accurate, I would still like to have the numbers for now (as opposed to just "trace"). But again, they aren't giving what they said they could, and that may be a negotiating point and/or a potential time savings. (2) Runs ALL samples through the PLM confirmation step, including ND's. Including PLM on NDs may help avoid a false negative or two that IR missed (such as lots of fibers only). (3) Runs *no* samples through an SEM confirmation step. As I said, I don't want to pay for it, and if I can't see it with PLM at this stage, then I will study it further on my own. We have SEM QC envisioned anyway. If they want to somehow mark these types of "unconfirmed" IR hits, that is fine with me.
- As our data begins to come in, we can evaluate the feasibility of a 2 step analysis train. First, a PLM analysis. If it is quantified or trace, we stop. If it is ND, we look add a second step of IR or SEM. We can evaluate the economic & technical feasiblity of this once we have about a month's worth of data. I'm not sure I trust PLM enough for this right now, but PLM is considerably cheaper so I need to at least consider it.
- I need multiple labs able to perform the SEM analysis as envisioned in the SAP for QC.
- I need the ability after a month's worth of data to evaluate the results, and shift analytical course if I need to.

If you have questions, let me know.

Jim